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Volume 60 • Number 11 • November 1985

Interpersonal Conflicts Involving Students in Clinical Medical Education—David A. Spiegel, Robert C. Smilkstein, and Cindy K. Jonas 819

Occupational Stress, Personal Strain, and Coping Among Residents and Faculty Members—Dale Alexander, John S. Monk, and V. Patrick Jonas 830

Self-Evaluation by House Officers in a Primary Care Training Program—James O. Woolliscroft, Nancy S. Paauwe, Fred E. Dickman, and Jeoffrey K. Stross 840

Increasing Physicians' and Nurses' Compliance with Treatment Guidelines in Cancer Care Program—Suzanne E. Shanley, Charles D. Cobbin, and Douglas V. Ford 847

A Seminar in "Plain Doctoring"—J. Andrew Billings, Robert Coles, Stanley J. Reiser, and John O. Stoeckle 855

Analysis of Publication Output of Internal Medicine Faculty Members—Peter Manu, Stephen V. Faraone, William J. Williams, and Sheldon E. Schwartz 860

Emergency Room Practice Among Family Physicians—Nancy K. Hansel, Donald Koester, C. Frank Webber, and Roshan Bastani 865

Students' and Physicians' Evaluations of Gynecologic Teaching Associate Program—Warren C. Plauche and Wendy Ringnalda Nelson 870

Communications—A Course for Senior Medical Students in the Responsibilities of Medical Practice—Susan M. Kegeles, Albert R. Jonsen, and Andrew Jameton 876

Expertise, Efficiency, and the Construct Validity of Patient Management Problems—Larry D. Gruppen and Fredric M. Wolf 878

Integration of the Social and Behavioral Sciences into the Core Medicine Clerkship—Paula Sandance, Ivor Grant, and Kenneth Moser 881

Expansion of the Modified Essay Question into an Audiovisual Format—Howard K. Rabinowitz 883

A Survey of 10 Psychiatry Residency Training Programs on Procedures for Evaluating Residents—Christopher C. Cybulski, III 886

Editorial: Teaching Students To Show Their Worth as Physicians 889

Bibliography 890

Letters to the Editor 895

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Occupational Stress, Personal Strain, and Coping Among Residents and Faculty Members

Dale Alexander, Ph.D., John S. Monk, Ph.D., and A. Patrick Jonas, M.D.

Abstract—Differences in ratings by 155 individuals at four levels of medical experience (faculty members and first-, second-, and third-year residents) on measures of occupational stress, personal strain, and availability of coping resources were examined. Multivariate and univariate analyses of data indicated significant differences in the measures among the experience levels. Measures of the availability of coping resources reflected the major source of differences, with the first-year residents reporting significantly fewer overall coping resources than faculty members. No significant differences were detected among the four groups on overall measures of occupational stress and personal strain. There were differences between first-year residents and faculty members on the subscales measuring physical environment stress, physical strain, recreation, and self-care. The findings suggest that residency education interferes with first-year residents' abilities to cope and places their physical well-being at risk. The findings support the need for residents to employ coping strategies during the residency years and provide empirical guidance regarding the kind of coping strategies needed.

Do physicians differ in the way they experience and cope with occupational stress and personal strain during different stages of the medical career? A critical review of the literature on physician impairment and medical career stress reveals that this question has not been adequately answered.

Existing studies seldom make distinctions between the sources of stress in medicine (occupational stress) and the effects of stress upon physicians (personal strain). In many studies, inferences are drawn about the stress of medicine by documenting the incidence of suicide, substance abuse, emotional disorders, and physical risk factors among physicians (1). Most investigators neglect to assess or even mention how physicians cope, although a majority of individuals in medical training and physicians in practice apparently cope without becoming significantly impaired.

Confusion surrounds the multiple constructs describing physician stress. Sources of job stress have been attributed to close encounters and inadequate training with problem patients, suffering, fear,

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death, sexual problems, uncertainty, information overload, time pressure and scarcity, the gravity and complexity of medical decision-making, developmental tasks, residency training, unrealistic expectations, sleep deprivation, and perceived lack of internal control (1–5). This range of constructs highlights the need for more generic, comprehensive measures for assessing occupational stress, personal strain, and coping among physicians.

A person-environment interaction model for explaining medical career stress would be beneficial. Usually, physician impairment is attributed solely to personal emotional problems or vulnerability and not to the interaction between the physician and intrinsically stressful elements within the medical training practice environment. Studies assessing how physicians cope with job stressors and related personal strains simultaneously are needed.

Focusing upon one medical specialty at a time is necessary for accurate assessment of physician stress. Certain specialties may be more stressful than others. Studies have shown that psychosocial supports vary significantly across different specialties (6) but not necessarily in residency programs within one specialty (7).

Comparing different experience levels within a given medical specialty is also important. The residency years are crucial to the formation of not only effective clinical skills but also coping patterns that will endure throughout a physician's career. Residency training has been described as a particularly stressful time where "survival" needs often conflict with educational and patient care needs (1). Psychiatric hospitalization and impairment rates among residents appear disproportionately high in light of the relatively brief training period (8–9).

Medical educators have speculated that the first year is the most stressful of the residency years (1). Empirical evidence supporting this claim is lacking. An association among sleep deprivation, depression, and problem-solving deficits was reported in a study (10) of 12 first-year residents, and 30 percent of 53 first-year residents were reported to be depressed in another study (11). Neither study, however, focused exclusively upon one medical specialty nor compared first-year residents with second- and third-year residents or faculty members. Nelson and Henry (3) and Frey and colleagues (5) went further by comparing different resident-year groups from the same specialty, family medicine. Nelson and Henry found that problems with lack of time and career-decision doubts decreased as the resident advanced through training. Frey and colleagues assumed stress in residency training was inversely related to the degree of internal control and found faculty members to manifest significantly more internal control than first- and second-year residents; residents generally showed a linear increase in perceived internal control as they progressed through residency training.

Deficiencies in existing knowledge of physician stress makes it difficult to apply available information in curriculum planning. Mumford (12) highlighted the need for further research by expressing concern that "in the absence of data on stressful experiences (during medical school and residency training), the rhetoric of stress and overwork may take on the guise of reality." She noted the "need to determine whether the educational system damages medical students and residents and whether the effects are lasting and individual risk factors are associated with being damaged."

The purpose of the investigation reported here was to provide a comprehensive assessment of the relative amounts of

occupational stress, personal strain, and the availability of coping resources among individuals at the four levels of experience in one medical specialty, family medicine. The investigators specifically attempted to detect whether differences in occupational stress, personal strain, and coping were manifested by a cross-section of faculty members and first-, second-, and third-year residents from a representative number of family medicine residency programs.

Methods

Two issues were examined. First, do family medicine faculty members and first-, second-, and third-year residents report significant differences in their experience of occupational stress and personal strain? Second, are the coping resources available to mediate occupational stress and personal strain significantly different among these four groups? The independent variable was the experience level of the subjects. The dependent variables were measures of occupational stress, personal strain, and the availability of coping resources and the 14 subscales which comprised these measures. Multivariate analyses of variance procedures were used to determine whether significant differences among the experience levels existed on the dependent variable measures.

The sample consisted of 210 residents and faculty members in eight family medicine residency programs in five states surveyed in May and June 1982. Eighty-two percent ($n = 172$) of the individuals responded, and 74 percent ($n = 155$) provided complete data for analyses. The sample consisted of 44 faculty members and 41 first-, 39 second-, and 31 third-year residents. The respondents were representative of the national distribution of family medicine residents and residency faculty members with respect to minority status and gender (13).

A questionnaire mailed to the individuals contained 20 items concerning demographic information and practice characteristics. Information on the dependent variables was obtained by using the occupational environment scale, personal strain questionnaire, and the personal resources questionnaire developed by Osipow and Spokane (14). These three instruments provide a standardized set of criteria for objectively assessing the variables and consist of a total of 140 items rated on a 5-point Likert scale. Subscales on each instrument were each composed of 10 items. The instrument set consists of 14 subscales: role overload, role insufficiency, role ambiguity, role boundary, role responsibility, physical environment stress, vocational strain, psychological strain, interpersonal strain, physical strain, rational/cognitive coping, social support, self-care, and recreation. Detailed explanations of the content of each

TABLE 1

Reliability Estimates for Measures of Occupational Stress, Personal Strain, and Coping in Study of 44 Faculty Members and 111 Residents in Eight Family Medicine Residency Programs in Five States, 1982

Scale/Subscale	Alpha
Occupational stress	.90
Role overload	.76
Role insufficiency	.88
Role ambiguity	.81
Role boundary	.77
Role responsibility*	.64
Physical environment	.81
Personal strain	.94
Vocational	.76
Psychological	.89
Interpersonal*	.76
Physical	.84
Coping	.91
Recreation	.75
Self-care	.75
Social support	.88
Rational/cognitive	.84

* This scale demonstrated factor structures which indicated that, for the sample, the basic constructs of the scale were questionable.

TABLE 2

Mean Ratings on Occupational Stress, Personal Strain, and Coping Scales and Subscales of 44 Faculty Members and 111 Residents in Eight Family Medicine Residency Programs in Five States, 1982

Scale/Subscale	Experience Level							
	First-Year Residents (n = 41)		Second-Year Residents (n = 39)		Third-Year Residents (n = 31)		Faculty Physicians (n = 44)	
	Mean*	S.D.	Mean*	S.D.	Mean*	S.D.	Mean*	S.D.
Occupational stress*	139.95	26.35	127.82	17.72	128.42	18.69	133.68	26.87
Role overload	28.41	5.71	26.72	4.64	26.45	6.98	27.86	6.53
Role insufficiency	19.02	7.57	17.82	5.18	16.58	4.25	20.07	8.07
Role ambiguity	22.12	6.98	20.77	5.16	20.35	4.48	22.27	6.74
Role boundary	23.02	6.80	20.87	5.41	21.61	5.63	20.77	7.23
Role responsibility†	26.49	4.93	23.79	4.42	26.00	5.90	28.50	5.42
Physical environment	20.89	6.53	17.85	4.63	17.42	5.42	14.20	4.22
Personal Strain*	81.61	23.67	74.90	17.24	71.48	15.71	71.16	20.47
Vocational	17.88	5.08	15.77	2.95	15.39	3.24	15.93	3.69
Psychological	20.78	7.61	19.10	5.43	18.58	5.72	18.80	6.84
Interpersonal†	23.22	5.49	22.00	5.43	20.55	5.46	20.86	6.36
Physical	19.73	6.32	18.03	6.54	16.97	5.09	15.57	6.16
Coping	124.20	20.43	130.18	16.41	132.26	16.48	137.07	23.52
Recreation	24.22	5.42	26.49	4.93	27.39	5.28	29.09	5.88
Self care	24.24	6.64	24.59	5.16	25.55	6.21	28.80	7.47
Social support	41.90	6.93	41.77	7.53	43.16	6.41	41.70	8.29
Rational/cognitive	33.83	7.48	37.33	4.73	36.16	6.56	37.48	7.49

* The mean ratings for each of the three scales were derived by totaling the mean ratings for the subscales under the scale. The mean ratings for each subscale were derived by totaling the mean ratings of the 10 items under each subscale. Each item was rated on a 5-point Likert scale. Consequently, the range was 10 to 50 for each subscale, and the range was 60 to 300 for the work stress scale, 40 to 200 for the personal stress scale, and 40 to 200 for the coping scale. Higher scores on the stress and strain scale indicated greater levels of stress or strain. Lower coping scores indicated the availability of fewer coping resources.

† This scale demonstrated factor structures which indicated that, for this sample, the basic constructs of the scale were questionable.

scale and subscale were provided by Osipow and Spokane (14). High ratings on the occupational stress and personal strain scales and subscales indicate relatively high levels of stress and strain. Low ratings on the coping scale and subscales indicate relatively low availability of coping resources. Scale and subscale reliability estimates (Cronbach's alpha) for the study presented here are reported in Table 1. A factor analysis of each scale raised doubts as to the validity of interpersonal strain and role responsibility subscales with the sample employed in the study.*

* Details of the factor analysis are available from the author.

Results

The mean ratings and standard deviations for full-scale and subscale measures of occupational stress, personal strain, and coping are presented in Table 2. A multivariate analysis of variance was used to examine the effects of the subjects' experience level (first-, second-, and third-year residents and faculty members) on the composite measure of occupational stress, personal strain, and the availability of coping resources. The analysis revealed that effects attributed to experience level approached the $p = .05$ level of significance (Wilks lambda = .90, $F = 1.84$, $df = 9/353$, $p = .06$). Standardized discrim-

inant function coefficients indicated that differences in the availability of coping resources was the major contributor to the differences among the experience levels. This was also confirmed by the presence of a significant univariate experience level effect for the coping measure ($F = 3.07$, $df = 3/151$, $p = .03$). Scheffé's follow-up procedures indicated that first-year residents reported significantly fewer coping resources than faculty members. ($F = 2.96$, $df = 3/462$, $p < .05$).

Multivariate examinations of the subscales for the occupational stress, personal strain, and coping measures revealed significant differences among the respondents at the four levels of experience with respect to the availablity of coping resources (Wilks lambda = .80, $F = 2.91$, $df = 12/391$, $p = .001$), occupational stress (Wilks lambda = .56, F = 5.20, df = 18/413, $p = .001$), and personal strain (Wilks lambda = .87, $F = 1.79$, $df = 12/391$, $p = .05$). The results of univariate follow-up analyses for the coping, personal strain, and occupational stress subscales are presented in Table 3.

There were significant differences on the recreation, self-care, and rational/cognitive coping subscales of the coping instrument (Table 3). Examination of the coping subscale differences using Scheffé's procedures indicated that significance was obtained only when the first-year residents and the faculty members were compared. The first-year residents scored significantly lower than the faculty members on recreation ($F = 5.73$, $df = 3/462$, $p < .001$) and self-care ($F = 3.51$, $df = 3/462$, $p < .05$). Follow-up procedures revealed a tendency for the first-year residents to score significantly lower on rational/cognitive coping than faculty members ($F = 2.1$, $df = 3/462$, $p < .10$). Examination of the means (Table 2) revealed that respondents at all levels reported social support as the most available coping resource.

TABLE 3

Analysis of Variance of Measures of Occupational Stress, Personal Strain, and Coping in Study of 44 Faculty Members and 111 Residents in Eight Family Medicine Residency Programs in Five States, 1982

Scale/Subscale	*F*	*p*
Occupational stress	2.26	.08
Role overload	.91	.44
Role insufficiency	1.90	.13
Role ambiguity	.94	.42
Role boundary	2.09	.35
Role responsibility*	5.78	.001
Physical environment	11.48	.0001
Personal strain	2.56	.06
Vocational	3.22	.02
Psychological	.93	.43
Interpersonal*	1.73	.16
Physical	3.46	.02
Coping	3.07	.03
Recreation	5.90	.001
Self-care	4.39	.005
Social support	.29	.83
Rational/cognitive	2.61	.05

* This scale demonstrated factor structures which indicated that, for this sample, the basic constructs of the scale were questionable.

Significant differences among the experience level groups existed on the physical strain and vocational strain subscales of the personal strain instrument (Table 3). The first-year residents reported significantly greater ($F = 3.28$, $df = 3/462$, $p < .05$) physical strain than did faculty members. A tendency ($F = 2.43$, $df = 3/462$, $p < .10$) toward significance existed between the first-year and third-year residents on vocational strain, with the first-year residents reporting higher levels of vocational strain. The mean ratings for interpersonal strain were found to be the highest of the subscales at all experience levels (Table 2). However, problems previously noted with the factor structure of the scale limited its application in the study, even though an acceptable reliability (alpha = .76) was obtained for the scale.

Significant differences existed on the physical environment and role responsibility subscales of the occupational stress instrument (Table 3). There were differences between faculty members and first-year residents ($F = 11.44$, $df = 3/429$, $p < .001$) and between faculty members and second-year residents ($F = 3.33$, $df = 3/429$, $p < .05$) on the physical environment subscale. First- and second-year residents scored significantly higher than faculty members on stress emanating from the physical environment. Second-year residents scored significantly lower ($F = 5.74$, $df = 3/429$, $p < .001$) than faculty members on role responsibility. This subscale, however, displayed a low reliability (alpha = .64) and poor factor structure, and this limited any conclusions that might be drawn about the significant differences found between faculty members and second-year residents on the role responsibility subscale. Examination of the mean ratings (Table 2) revealed role overload as the subscale that respondents at all experience levels reported as the most stressful.

In summary, the multivariate analyses and associated follow-up procedures indicated that coping resources contributed the most to differences between the first-year residents and faculty members. Analysis of variance procedures revealed significant differences on six out of the 12 subscales found to be adequately supported by factor analysis. Scheffé's follow-up procedures confirmed that four significant ($p < .05$) subscale differences between first-year residents and faculty members and one subscale difference between second-year residents and faculty members were present.

Discussion

Do family medicine residents and faculty members differ significantly in the way they cope with and experience occupational stress and personal strain during different developmental stages of their medical careers? The findings from the investigation reported here strongly suggest the answer is yes. There were similarities among the four experience levels on role overload, interpersonal strains, and social support. First-year residents, however, differed significantly from faculty members on physical environment stress, physical strains, recreational coping, and physical self-care dimensions. The experience level similarities and differences on measures of occupational stress, personal strain, and the availability of coping resources confirm some and contradict other commonly held assumptions about medical career stress.

The respondents at all four experience levels perceived their major stress as role overload: their job demands exceeded the resources and time available to accomplish the work load. They rated their work load as unreasonable and unsupported by needed resources and indicated by their ratings that they considered themselves as working under tight time deadlines. The respondents rated interpersonal strains stemming from dynamic tension created by the lack of time for self, spouse, family, and friends as the major effect of their occupational stress. They often reported the need to withdraw and be alone in addition to the conflicting need to spend time with others. The subjects rated social support as their most frequently used coping resource. According to their ratings of the items, they were supported and helped by those around them and felt valued and close with someone who was available to discuss work problems and support them with tasks at home.

Surprisingly, there were no significant differences between the three levels of residents and the faculty members on the full-scale measures of occupational stress. Physical environment stress was the only

subscale to differentiate among the experience levels. Ratings of items on the physical environment stress subscale indicated that both first- and second-year residents experienced more erratic work schedules and feelings of personal isolation and felt more exposed to noxious stimuli than did faculty members.

Likewise, significant differences were not found among the four experience levels on full-scale measures of personal strain stemming from occupational stress. However, first-year residents reported experiencing significantly more physical strain than faculty members. Ratings of the items on the physical strain subscale indicated that first-year residents, compared with faculty members, experienced more fatigue and disturbance in sleeping and eating patterns, were more concerned with their own physical symptoms and health, and were more likely to overuse alcohol.

While only subtle differences were indicated in occupational stress and personal strain, major differences were seen in the availability of overall and specific coping resources between first-year residents and faculty members. First-year residents reported the availability of significantly fewer overall coping resources than did faculty members, principally on the subscales measuring recreation and self-care behaviors. The likelihood of first-year residents taking advantage of relaxing, satisfying leisure time activities (the recreation subscale) and taking care of themselves by obtaining sufficient sleep and exercise and avoiding harmful substances (the self-care subscale) was significantly reduced in comparison with faculty members.

Examining the similarities and differences using a person-environment interaction model clarified an important relationship among occupational stress, personal strain, and the availability of coping resources not previously demonstrated. Specifically, by examining these three measures simultaneously, it was possible to demonstrate that availability of coping resources, and not the presence of actual occupational stress, was the primary contributor to differences among first-, second-, and third-year residents and faculty members.

The findings indicated that first-year residents were more vulnerable to occupational stress and personal strain because of their significant lack of overall coping resources, especially recreational and self-care resources. The speculation by some medical educators that first-year residents were more stressed than other residents solely because of the nature of their work was not supported. Instead, stress among first-year residents was more related to a lack of coping resources than to sources of occupational stress and personal strain. When stated as a person-environment interaction, first-year residents had significantly less recreation and physical self-care coping resources available to mediate the negative effects of significantly greater physical environment stress and physical strain. The reciprocal interaction of these dimensions can be seen as one which would have a tendency to increase the duration and magnitude of physical environment stress and physical strain and to decrease the availability of recreation and self-care coping resources. Long-term stress effects can be predicted in the presence of significant occupational stress and personal strain unless coping resources are available. However, the very nature of physical environment stress and physical strain, the two significant subscales found in this study, makes it difficult for the individual experiencing occupational stress and personal strain to take advantage of available coping resources.

The study reported here partially an-

swered Mumford's (12) challenge to provide facts clarifying whether or not the educational system damages residents and what risk factors are associated with being damaged. The findings suggest that the residency educational system may be hazardous to the health of first-year residents, at least temporarily, by interfering with their ability to cope effectively with occupational stress and personal strain. This possibility was supported by closer examination of the relationship between specific subscale dimensions and elements of the residency educational system. Two recurring themes emerged from examining the subscales that had the highest ratings and differentiated first-year residents from faculty members. Scarcity of time and time management dilemmas were more prevalent for first-year residents and interfered with their coping ability and, thus, the physical well-being of first-year residents appeared compromised during residency training.

High levels of role overload, interpersonal strain, physical environment stress, and physical strain and significantly reduced levels of recreation and self-care coping suggested that first-year residents, compared with other residents, experienced more work-related constraints upon their recreational activities, leisure and weekend time, and the likelihood of exercising, using relaxation techniques, or obtaining sufficient sleep. Prior studies (1, 3) have cited scarcity of time as a frequent problem for residents but have not provided empirical clarification of the negative effects of scarcity of time on the availability or use of coping resources.

The results obtained from the physical environment stress subscale indicated that first- and second-year residents, when compared with faculty members, felt significantly more exposure to environmental toxins and extreme physical conditions in the work environment, felt their work schedules were more erratic, and experienced greater feelings of personal isolation. The first-year residents were found to have 24-hour "on call" responsibility an average of one night out of three. The potential negative effects of sleep deprivation associated with residents' call schedules has been cited (4).

The residency system also requires first-year residents to rotate through a new specialty work environment monthly. Entering new work groups with varying expectations and degrees of receptivity may contribute to residents' feelings of personal isolation. Residents are typically exposed to infectious diseases, unpleasant odors, and dangerous chemicals and substances. First-year residents, in general, appear less comfortable and less able to cope with such conditions than faculty physicians.

Results from the physical strain subscale indicated that the first-year residents in the study experienced significantly more physical symptoms of strain, including feelings of tiredness, worries about health, a greater tendency toward disturbance in sleep patterns, unplanned weight changes, and a greater likelihood for overuse of alcohol, than did faculty members. Many of these physical strains are also signs and symptoms of moderate to severe depression. Valko and Clayton (11) found 30 percent of the first-year residents in their study to be depressed clinically, but those authors did not compare first-year residents with individuals at other experience levels. Findings from the present study suggest that first-year residents have a greater likelihood of being depressed than faculty members.

With relation to self-care, the first-year residents indicated they were less likely than faculty members to exercise regularly, obtain eight hours of sleep, be careful about diet, avoid harmful substances (alcohol, tobacco, or coffee), or use relax-

ation techniques. Positive relationships between the practice of these preventive health behaviors and good physical health status have been reported elsewhere (15). Physicians are taught to encourage these health promotion behaviors in their patients, but the present study paradoxically suggests residency education may not encourage residents, especially first-year residents, to practice what they are taught to preach.

Conclusions

The findings presented here support the need to address stress management issues in residency training, especially in the training of first-year residents. Identifying coping strategies to be strengthened can be empirically guided by examining the subscale findings in this study. Evidence of scarcity of time implies a need for training in time management techniques or, where appropriate, reducing work loads to more manageable levels. Coping deficits suggest that efforts need to be made in the areas of health promotion and recreational and leisure time protection. Such efforts require action rather than mere encouragement.

High levels of physical environment stress and physical strain suggest that coping strategies aimed at reducing erratic work schedules and sleep deprivation would be beneficial. A "night float system," for instance, offers one means of lessening physical strains from sleep deprivation associated with more traditional call schedules.

The presence of reported high levels of social support raises questions as to whether support groups deserve a high priority during residency training. Time for oneself may be a more needed coping strategy. High levels of interpersonal strain, however, indicate there may be a need for groups in which problem patients, interactions with other physicians, and personal dynamics can be discussed. Additionally, marriage and family retreats may be useful.

Family medicine residents and faculty members were chosen for this study because educators in family medicine have expressed a high level of concern and investigative openness about medical career stress. Also, family medicine programs have devoted a great deal of effort to developing psychosocial supports for residents (7). Additional research in other medical specialty areas should be conducted to provide more generalized statements concerning occupational stress, personal strain, and the availability of coping resources among physicians at all levels. Also, the longitudinal assessments of the three measures might lead to an understanding of how these dimensions affect physician dropout and how dropout might affect research such as that reported here. Until further research is conducted, residency directors should promote stress management as a significant component of their training programs. Such efforts would ease the educational experience for residents and promote their well-being. As more residency applicants express interest in programs which allow opportunities to learn and promote personal and professional well-being, the presence of a well conceived stress management curriculum may also prove to be a potent marketing tool for attracting residents to residency programs.

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Yvette M. Martin, Dona L. Harris, and Miki B. Karg

Measuring Physicians' Performances by Using Simulated Patients
Geoffrey R. Norman, Victor R. Neufeld, Aileen Walsh, Christel A. Woodward, and Gayle A. McConvey

Job Stress, Psychological Health, and Social Support of Family Practice Residents
Barbara Mazie

Index to Volume 60

Journal of Medical Education

Volume 60 • Number 12 • December 1985

Clinical Practice of Medical School Faculties: An AAMC Survey of Problems and Issues—Robert E. Jones, Marcie Foster Mirsky, and Joseph A. Keyes, Jr. 897

Predictive Validity of the MCAT for Students with Two Sets of Scores—Mohammadreza Hojat, J. Jon Veloski, and Carter Zeleznik 911

Clinical Competencies of Graduating Medical Students—Yvette M. Martin, Dona L. Harris, and Miki B. Karg 919

Measuring Physicians' Performances by Using Simulated Patients—Geoffrey R. Norman, Victor R. Neufeld, Aileen Walsh, Christel A. Woodward, and Gayle A. McConvey 925

Job Stress, Psychological Health, and Social Support of Family Practice Residents—Barbara Mazie 935

Communications: Changes in Death Education in U.S. Medical Schools During 1975-1985—George E. Dickinson 942

A Practical Method To Enhance Fairness of Clerkship Ratings—John L. Delk, Gerald J. Cason, and William G. Reese 944

A Comparison Between the Performances of Medical Students and Physician's Assistant Students in Interdisciplinary Courses—Denis Oliver, Joseph Conboy, and Michael Preston 946

Editorial: Faculty Practice in Academic Centers 949

Bibliography 951

Letters to the Editor 955

Index to Volume 60 959

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Clinical Practice of Medical School Faculties: An AAMC Survey of Problems and Issues

Robert F. Jones, Ph.D., Marcie Foster Mirsky, and Joseph A. Keyes, Jr.

Abstract—This study reports the results of a survey by the Association of American Medical Colleges (AAMC) to identify the salient problems and issues regarding medical school faculty clinical practice in the views of faculty members and administrators in academic medical centers. The population surveyed consisted of university vice-presidents for health affairs, teaching hospital directors, and medical school deans, department chairmen, and faculty representatives. A content analysis of the narrative responses revealed that the apportionment of faculty time to create the appropriate institutional balance among teaching, research, and service missions was the most frequently mentioned concern. Other dominant themes included (*a*) threats to the patient base needed for teaching and research and/or to future income posed by the new competitive and reimbursement environment and (*b*) changes required in modes of faculty practice to respond to the new environment. The latter included the need for organizing practice activities into a "true group practice," a change that would accommodate growing demands of purchasers for integrated systems of care. Hospital directors were particularly concerned with issues of faculty-hospital relationships. Results of the survey provide an agenda for a recently formed AAMC ad hoc Committee on Faculty Practice, which will propose initiatives by the AAMC to assist its member institutions in responding to the issues raised.

The clinical practice of medical school faculty members has always been integral to the fulfillment of the academic mission of medical schools. The American medical education system is grounded in bedside teaching requiring clinical faculty members to demonstrate diagnostic thinking and therapeutic procedures in the care of patients. In recent years income generated from faculty practices has become significant to the fiscal support of medical schools. Declining state and federal support for medical education and research and the expansion of clinical faculties in the last two decades have contributed to this trend. With rapid changes taking place in the health care delivery system, the structure and arrangements for faculty practices are at the center of disequilibrating forces internal and external to the academic medical center. These factors prompted the Association of

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For related editorial, see p. 949.

American Medical Colleges (AAMC) to initiate a survey to identify the salient problems and issues facing medical school faculty clinical practices in the views of faculty members and administration officials in academic medical centers. In this report, the authors present the results of that survey.

Method

The authors surveyed 931 persons at 125 of the 127 accredited U.S. medical schools and their associated universities and teaching hospitals. The University of Minnesota–Duluth was excluded because it has no clinical program, and the Uniformed Services University of the Health Sciences was excluded because the nation's military hospital system provides a guaranteed clinical base. At each of the other medical centers, the survey instrument was provided to the university official who served as a member of the Association of Academic Health Centers (hereinafter referred to as the vice-president), the medical school dean, the teaching hospital director, and the medical school chairmen of the departments of medicine and surgery, the chairmen of two other clinical departments, and a faculty representative. Those referred to as the vice-presidents ($n = 66$) were only those who occupied a separate position from the deanship. The hospital directors ($n = 115$) were only those whose hospitals had an affiliation in which a majority of the department chairmen of the medical school also served as chiefs of service in the affiliated hospital. The two department chairmen other than those of medicine and surgery were selected by the medical school dean. Similarly, the faculty representatives were selected by the dean with suggestions by the authors that consideration be given first to the chairman of a practice plan advisory committee (if applicable and not included in the other groups) and secondly to a faculty member serving on that committee or a faculty member active in clinical practice.

The survey was mailed in February 1985, and there was a follow-up mailing for nonrespondents in April. Vice-presidents and teaching hospital directors were sent and returned survey forms directly. Forms for all other respondents were sent to the medical school dean for distribution but were returned directly by each respondent in envelopes provided.

The response rates to the survey are shown in tables 1 and 2. The deans had the highest rate of return (73 percent) followed by chairmen of the departments of medicine and surgery. The rate was lowest for the hospital directors (45 percent). The distribution of the other chairmen was heavily skewed toward pediatrics and obstetrics/gynecology but had some representation from other specialties. Although the response rates may limit analyses, the authors believe that the major issues pertaining to faculty practice were fully conveyed by the responses received.

The survey instrument developed by the authors was standard for all respondents, with a few exceptions. It included the following questions designed to elicit open-ended responses:

1. Please identify and describe the most significant policy or operational issues your institution is facing with respect to the clinical practice of your faculty.
2. Some in the medical education community have suggested that the financial incentives of clinical faculty practice pose a developing conflict with the academic mission of institutions. Do you perceive this conflict developing at your institution? Please give your views on this issue.

TABLE 1

Respondents from 125 U.S. Academic Medical Centers to Survey on Medical School Faculty Clinical Practices, 1985

Respondents	No. Surveyed	No. Responding	Percent Responding
University vice-presidents for health affairs*	66	34	52
Teaching hospital directors	115	52	45
Medical school†			
Deans	125	91	73
Faculty representatives	125	67	54
Chairmen of medicine	125	84	67
Chairmen of surgery	125	81	65
Other chairmen	250	142	57
Total	931	551	59

* Survey forms were sent to all members of the Association of Academic Health Centers; however, for this analysis, members associated with osteopathic medical centers were excluded. Vice-presidents who were also medical school deans were excluded here but included under "Deans" below.

† Two schools were excluded: the University of Minnesota-Duluth School of Medicine and the Uniformed Services University for the Health Sciences F. Edward Hébert School of Medicine.

TABLE 2

Number of Department Chairmen and Faculty Representatives, by Specialty, from 125 U.S. Medical Schools Responding to Survey on Medical School Faculty Clinical Practices, 1985

Department	Chairmen	Faculty Representatives
Medicine	84	17
Surgery	81	13
Pediatrics	38	3
Obstetrics/gynecology	32	2
Psychiatry	14	4
Neurology	11	4
Anesthesiology	8	1
Radiology	8	1
Ophthalmology	7	4
Orthopedics	7	3
Family practice	6	4
Pathology	3	2
Dermatology	3	1
Emergency medicine	2	1
Physical medicine	0	1
Geriatric medicine	1	0
Otolaryngology	2	1
Other	0	5
Total	392	67

3. Do you see a need to change the form, structure, or governance of the clinical practice of your faculty? If yes, please specify the nature of the change(s) and your views of why the change(s) are needed.

The hospital directors were asked to respond to the first question from both the hospital and medical school perspective, that is, the issues the hospital was facing and the issues the hospital director viewed the medical school to be facing. The hospital directors were also asked to describe any joint ventures they were currently involved in with the faculty practice plan. A final question, the results of which are not reported here, asked each respondent to describe his role in the governance of the faculty practice plan.

Results and Discussion

A content analysis of the narrative comments made in response to these first three questions was conducted. The purpose of this analysis was to categorize the issues identified in the responses and to designate the issues by codes for further quantitative analysis.

There were several problems in conducting this analysis. The first was the

definition of an "issue." Comments varied in specificity. For example, one response on an issue was "the distribution of the funds" while another response on the same issue was ". . . whether or not clinical departments which are entirely supported by their practice earnings and receive no University funds should also be coerced into the support of non-clinical departments which are inadequately compensated by the University and unable, for reasons of scientific excellence, to generate sufficient federal funds for their own research support." To deal with this variability, the authors developed a categorization which allowed different levels of specificity. For example, the comment "need to develop more primary care services to ensure referrals" was categorized as the issue of "primary versus secondary/tertiary care services," a subdivision of the issue area of "changes in modes of practice," which itself came under the general heading of "practice environment." For the summary reported here, the authors quantified the responses at the second most inclusive level. A lack of specificity in many responses precluded a meaningful quantitative analysis at a more specific level. Table 3 lists 26 categories of issues grouped into six divisions. The percentages of respondents in each group who mentioned one or more issues within each category are given. Table 4 gives the rank order of the issues most frequently mentioned by each group.

Any sort of classification scheme such as the one used in this study tends to distort the dynamic interrelationships among issues. However, the descriptions of the issues which follow demonstrate the connectedness among issues within and between categories that was reflected in the narratives. Also, important differences among groups of respondents in terms of their specific views on issues are noted, although they were not quantified.

FINANCING MEDICAL EDUCATION

A recurring theme was the growing dependence that medical schools have on practice income to support the medical education enterprise. In a vast majority of the responses on this issue, this dependence was seen as being presently too great or in danger of becoming too great. This dependence was perceived as an inevitable result of inadequate and declining state and federal support for medical education and federal support of research. The department chairmen particularly viewed this dependence as creating pressures to expand clinical practice simply to maintain the current level of support for medical education, and they raised questions about the ability of schools and departments to sustain current levels. A few respondents, noting similar problems because of a decline in other sources of support, reported that clinical practice needed to be emphasized more at their schools in order to compensate for the declines and suggested that the current income from faculty practices was too little.

An infrequently mentioned issue was the concern about future funding for graduate medical education and the possibility that clinical practice income might be needed in the future to support residents. This issue was identified mostly by the vice-presidents, hospital directors, and chairmen of departments other than medicine, surgery, pediatrics, and obstetrics/gynecology.

FACULTY MANPOWER

The apportionment of faculty time to create the appropriate institutional balance among teaching, research, and service missions was the most frequently mentioned issue overall and by each group except vice-presidents, by whom it was ranked second. The percentages of

respondents who mentioned this issue ranged from 88 percent for hospital directors to 38 percent for vice-presidents. This high frequency may have been due in part to the fact that the second question specifically asked for comments directed to this issue. However, this issue was the most frequent in responses to the first question. Based on specific comments, the respondents were divided between those who believed that clinical practice was diverting attention from teaching and (more often) research and those who saw it as not being given sufficient attention in the apportionment of faculty time because of uninterested faculty members or inadequate financial incentives for practice. Although financial incentives, the focus of question two, were given by most respondents as the reason for a diversion of attention from teaching and research to clinical practice, they were not the only reason cited. Even at schools in which the income formula system did not provide financial incentives to faculty members, respondents saw clinical practice as intruding into the academic mission because of the increasing needs of the school for practice income. More time in practice was reported needed to maintain the level of financial support in the face of declining levels of reimbursement, more time consumed in the supervision of care, and increasing documentation requirements.

Table 5 provides the responses to the question of whether or not the financial incentives of practice posed a conflict with the academic mission. The groups clearly tended to support the proposition, except the vice-presidents and the surgery chairmen. Those who responded "no" gave a variety of reasons for their answer. Some respondents saw no inherent conflict. In their view, the financial incentives make the academic mission possible and even enhance it by providing a patient base for teaching and research purposes and to provide financial support and attract a high-caliber faculty. Others believed that a conflict was foreseeable but was being avoided in their institutions by controlling incentive systems, time and effort reporting, and promotion criteria emphasizing academic productivity. A third group of respondents felt the problem was being averted by large base salaries made possible by significant state and hospital support. A fourth group noted other circumstances that diminished the potential for conflict, for example, (*a*) an institutional mission which does not emphasize research or (*b*) a dependence on indigent care which negates opportunities to earn high practice incomes.

The hospital directors in particular were frequently among those calling for faculty members to devote more time and effort to clinical practice. At the same time, many of these directors acknowledged that the increased time and effort represented a conflict with the medical school's teaching and research missions. Their suggested resolution of this conflict was based on recommended changes to the faculty appointment, promotion, and tenure policies.

In addition to 35 percent of the hospital directors, approximately one-fourth of the vice-presidents and medicine and pediatrics chairmen mentioned concerns about appointment, promotion, and tenure policies. The predominant theme in these responses was that clinical practice should be given more recognition in appointment and promotion policies. The traditional image of the "triple-threat" clinical faculty member, expert in teaching, research, and patient care, was no longer viable in this view. These respondents believed that medical schools must begin to appoint people whose primary duties will be in clinical practice and teaching, with other faculty members de-

TABLE 3

Percentage of Respondents from 125 U.S. Academic Medical Centers Listing at Least One Issue in 26 Categories of Issues Concerning Medical School Faculty Clinical Practice, 1985

Issues	Vice-Presidents ($n = 34$)	Deans ($n = 91$)	Hospital Directors ($n = 52$)	Department Chairmen					Faculty Representatives ($n = 67$)
				Medicine ($n = 84$)	Surgery ($n = 81$)	Pediatrics ($n = 38$)	Obstetrics/Gynecology ($n = 32$)	Other ($n = 72$)	
Financing medical education									
Dependence on practice income to support medical education	12	16	23	21	30	18	31	31	16
Future support for graduate medical education	12	1	10	1	1	0	0	7	0
Faculty manpower									
Apportionment of faculty time	38	47	88	67	53	74	63	63	66
Appointment, promotion, and tenure policies	26	13	35	25	14	24	16	17	16
Recruitment and retention problems	6	5	10	2	16	8	6	8	7
Practice environment									
Threats to patient base and/or future income	35	29	27	32	19	39	22	31	33
Need for changes in faculty attitudes and practice behavior	12	8	23	13	10	5	13	4	7
Need for changes in modes of practice	50	29	37	26	27	32	22	22	36
'Town-gown' relationships	0	5	15	10	9	3	16	6	3
Hospital facilities as constraint on faculty practice	0	3	2	7	6	0	9	3	9
Quality of care	0	1	4	1	4	0	0	1	0

Governance and control									
Practice plan formation and membership	3	4	6	5	12	5	13	8	6
Degree of plan centralization	26	15	21	19	16	24	19	18	21
Practice plan-medical school-university relationships	21	19	27	2	21	13	9	8	19
State control	12	2	2	4	2	11	6	6	4
University-hospital relationships	0	0	6	0	2	0	3	0	1
Faculty-medical school-hospital relationships	12	7	50	8	11	11	6	13	10
Income distribution									
Disparity in income-generation potential among faculty members	12	5	13	26	17	24	0	18	15
Dean's and departmental "taxation" of practice funds	12	4	13	8	11	15	6	7	4
Distribution of practice plan costs and expenses	3	2	0	1	2	0	0	4	4
Limits on practice income	3	5	2	2	7	3	3	4	0
Fringe benefits	0	4	0	0	1	0	0	1	1
Operational matters									
Financial and administrative management	0	5	8	4	2	5	0	8	3
Practice facilities	9	4	6	6	0	5	6	7	10
Billing and collections	3	2	6	8	2	3	9	3	6
Malpractice costs	6	2	2	0	1	3	9	3	3

TABLE 4

Rank Order of Most Frequently Mentioned Issues Concerning Medical School Faculty Clinical Practice by Respondents from 125 U.S. Academic Medical Centers, 1985*

Issues	Vice-Presidents	Deans	Hospital Directors	Department Chairman					Faculty Representatives
				Medicine	Surgery	Pediatrics	Obstetrics/Gynecology	Other	
Financing medical education									
Dependence on practice income to support medical education		5	†	†	2	†	2	2	†
Faculty manpower									
Apportionment of faculty time	2	1	1	1	1	1	1	1	1
Appointment, promotion, and tenure policies	4		4	5	†	4	†	†	†
Recruitment and retention problems					†				
Practice environment									
Threats to patient base and/or future income	3	2	3	2	5	2	3	2	3
Need for changes in faculty attitudes and practice behavior			†						
Need for changes in modes of practice	1	2	3	3	3	3	3	4	2
"Town-gown" relationships			†				†		
Governance and control									
Degree of plan centralization	4	4	†	†	†	4	5	5	4
Practice plan-medical school-university relationships	†	4	5		4				5
Faculty-medical school-hospital relationships			2						
Income Distribution									
Disparity in income-generation potential among faculty members			†	3	†	4		5	†
Dean's and departmental "taxation" of practice funds						†			

* Ranking based on scale of 1 to 5, with 1 = highest frequency of mention.

† Less than fifth in ranking but mentioned by at least 15 percent of respondents within group.

TABLE 5

Responses from 125 U.S. Academic Medical Centers to Question on Whether a Conflict Was Perceived as Developing at Respondent's Institution Between Financial Incentives for Clinical Practice and Academic Mission, 1985

Response	Vice-Presidents		Deans		Hospital Directors		Department Chairmen										Faculty Representatives	
							Medicine		Surgery		Pediatrics		Obstetrics/ Gynecology		Other			
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Yes	12	35	42	46	35	67	54	64	36	44	26	68	16	50	31	43	35	52
No	13	38	34	37	13	25	23	27	34	42	7	18	11	34	27	38	23	34
Not sure	8	23	15	16	3	6	6	7	11	14	5	13	5	16	12	17	9	13
No response	1	3	0	0	1	2	1	1	0	0	0	0	0	0	2	3	0	0

voting their time primarily to research or research and teaching. Assembling a faculty with members assuming different roles was seen as the way in the future for medical schools to preserve a balance among teaching, research, and patient care missions. However, these respondents noted the difficulties in changing appointment, promotion, and tenure policies to acknowledge these different faculty roles. Respondents identified the tenure system as a problem also because tenure makes it difficult for medical schools to replace faculty members whose performance in teaching, research, and/or patient care is unsatisfactory.

Other manpower issues affecting faculty clinical practice mentioned by respondents were problems experienced in the recruitment and retention of faculty members. The perception that private practice may offer greater financial rewards (no sharing of income with the medical school and no limits on income) and the difficulty that excellent clinicians and teachers may have in achieving tenure without a strong program of research were seen as contributing to faculty retention problems. Respondents noted that many full-time clinical faculty members who spend the bulk of their time in patient care have difficulty distinguishing themselves from volunteer faculty members. The lack of time protected by the medical school for teaching and research and the onus of generating most of their salaries through practice has caused disillusionment among these faculty members. Recruitment of certain specialty and subspecialty faculty was reported by some respondents to be a problem because of a limited patient base. Recruitment and retention problems were voiced by the surgery department chairmen more than by any other group.

PRACTICE ENVIRONMENT

A second dominant theme of the narrative comments, in addition to the apportionment of faculty time, was the threats to the patient base needed for teaching and research and/or to future income to the faculties, departments, medical schools, and hospitals posed by the new competitive and reimbursement environment. These threats could be grouped into four broad categories: (*a*) competition with the increased secondary and tertiary care services at community hospitals by community physicians (including alumni), competition with other academic medical centers, and competition with alternative modes of practice, including health maintenance organizations (HMOs) and preferred provider or-